

CIOGS Specification Report (November 2025)

Community Development Block Grant – Disaster Recovery (CDBG – DR) Housing and Urban Development (HUD) grant program

1. Description

The City of Detroit's Department of Public Works (DPW), Traffic Engineering Division (TED) previously secured 100% federally funded award from the Department of Housing and Urban Development (HUD) grant program for the Detroit community development through Community Development Block Grant – Disaster Recovery (CDBG - DR). This project aims to establish remote connectivity to 198 traffic signals within the City of Detroit and to provide Uninterruptible Power Supply (UPS) system at 40 selected signalized intersections to minimize signal blackout during power loss.

The grant partners include: Miovision, Carrier & Gable (Supplier), and Motor City Electric Utilities Company (Construction Contractor)

2. Purpose

Task #1

The purpose of this HUD grant Project (task #1) is to enhance the safety and mobility of Detroit's Road users by deploying various levels (Level 1 and Level 2) of the Remote Traffic Signal Monitoring System (RTSMS) at 198 traffic signals throughout the city. Once all Level 1 work is completed, these 198 existing signalized intersections will be fully integrated into a centralized monitoring system. This system will enable traffic engineers to remotely monitor signal performance in real time and receive automatic alerts when a signal goes into flash or dark mode. This will allow for quicker response times and reduced disruptions to traffic flow.

The implementation of Level 2 RTSMS will expand this capability by adding 360° cameras at 150 of the 198 intersections. These cameras will provide enhanced situational awareness and allow traffic counts to be collected remotely, reducing the need for manual field data collection. Additionally, Level 2 upgrades will offer access to advanced signal performance metrics that lead to improved safety and mobility outcomes.

As part of this Project, all 198 traffic signals will also be fully integrated into the City's Traffic Management Center (TMC). This integration will allow operators to manage, analyze, and optimize the traffic signal network more effectively, ensuring timely interventions during incidents, special events, and peak traffic periods. Ultimately, the combined improvements delivered through RTSMS Levels 1 and 2 will support a more efficient citywide traffic management system.

Task #2

Task #2 of the grant project focuses on installing Uninterruptible Power Supply (UPS) battery backup systems at 40 selected traffic signal intersections. These UPS units are designed to automatically activate

during long-duration power outages caused by severe weather, DTE equipment failures, or other unforeseen technical issues. By providing an additional 5 to 6 hours of continuous power, the system ensures that traffic signals remain fully operational even when the main power supply from the utility company (DTE) is disrupted.

Maintaining signal functionality during outages is critical for preventing confusion among road users, reducing the risk of crashes, and minimizing congestion at busy intersections. Enabling uninterrupted signal operation directly enhances both safety and mobility, ensuring that intersections continue to function smoothly during emergency or adverse conditions.

3. Deployment

Several factors were considered when determining where to deploy the systems under Task #1 (RTSMS deployment) and Task #2 (UPS battery backup). This included identifying intersections and locations that would receive the greatest operational and safety benefits from deploying these technologies. Priority was given to critical intersections such as those with high traffic volumes, a history of power interruptions, or significant safety concerns where enhanced monitoring and uninterrupted signal operation would have the most meaningful impact.

By strategically selecting these locations, the city ensures that both the RTSMS and the UPS units provide maximum value through improved signal reliability, reduced downtime, and enhanced real-time oversight.

The list of selected signalized intersections is provided in Attachment A along with the map for reference.

4. Fiscal Impact

The proposed project has received a 100% federal funding of \$9 million through CDBG – DR HUD grant program. This funding is used for procurement, installation, and integration of the Remote Traffic Signal Monitoring System (RTSMS) and Uninterruptible Power Supply (UPS) units.

The investment is anticipated to generate long-term operational savings by reducing field maintenance trips, minimizing signal downtime, and improving overall system reliability. In addition, maintaining signal operation during power outages reduces the need for police traffic control, thereby lowering overtime and resource deployment costs.

Overall, the project is expected to improve operational efficiency, enhance safety, and reduce ongoing maintenance expenses, resulting in a positive long-term fiscal effect for the city.

5. Civil Rights and Liberties Impacts

The technology is designed to enhance safety without infringing on civil rights and liberties. Existing traffic systems which have already fallen under this CIOGS and have gone through the vetting process are being enhanced with non-personally identifiable information (non-PII) such as traffic counts, signal operation and advanced analytics to improve traffic management and roadway safety without intruding on personal

privacy. The 360° cameras installed in this project will only be used for traffic counts, vehicle detection and signal performance analytics.

6. Authorized Use

This technology deployment is intended solely to support roadway safety and mobility initiatives. The systems will be used to collect and analyze traffic data, generate real-time alerts, and improve the City's ability to monitor and respond to signal-related issues. These capabilities directly contribute to safer intersections, reduced congestion, and more efficient traffic operations.

For the RTSMS deployment under Task #1, access to the dashboard will be strictly limited to only authorized staff within the Traffic Engineering Division (TED) and a small number of designated City personnel will be granted login credentials. The dashboard is not accessible to the public, and all system interactions are controlled through individual user accounts with defined access levels to ensure proper data security and system integrity. User activity is logged and monitored as part of routine system oversight.

For the UPS installation under Task #2, physical access will be restricted. The UPS cabinets will only be accessible to TED field technicians and approved TED maintenance contractors who are responsible for installation, upkeep, and emergency response.

Overall, both systems are governed by strict access protocols to ensure that the technologies are used appropriately and exclusively for their intended purpose of enhancing traffic safety and mobility.

7. Data Collection

Under the Level 1 deployment, the Remote Traffic Signal Monitoring System (RTSMS) collects essential operational data from each signalized intersection. This includes information on signal status, controller operation, fault alerts, and basic signal performance metrics.

Level 2 expands upon the basic monitoring functions by integrating 360° cameras at selected intersections. This component provides continuous intersection video coverage, stored in 15-minute intervals for up to 6 weeks. During this period, authorized staff can download and archive the footage to the cloud for further analysis, if needed. The Traffic Engineering Division (TED) uses these videos exclusively to evaluate intersection safety, observe driver/pedestrian behavior, assess overall operational effectiveness and to improve intersection safety and operation.

In addition to video, the Level 2 deployment captures advanced traffic signal performance data, including turning-movement vehicle counts, approach volumes, and other metrics that support detailed engineering evaluations. These insights are used solely for safety analysis, system performance monitoring, and planning future improvements.

The UPS systems installed under Task #2 collect only data related to power quality and power outage events. This includes timestamps of lost power, UPS engagement, and power restoration. This data is only accessible to authorized TED field technicians and engineers.

8. Data Protection

All Data will adhere to strict cybersecurity and cloud storage guidelines set forth in ISO 27001 or AICPA Soc 2 Type 2 reporting as applicable. The ISO guidelines provide a security framework created by the International Organization for Standardization (ISO). To achieve certification, companies must complete an audit to verify that they comply with ISO 27001's rigorous standards. The American Institute of Certified Public Accountants (AICPA) guidelines assess a company's ability to keep its data safe.

Contractors are also expected to destroy all Data, including back-ups and copies thereof, according to the National Institute of Standards and System 800-53 (NIST) standards or as otherwise directed by the City. Data will be encrypted to ensure it is protected from unauthorized access. Only authorized personnel will have access to the data through a login-based cloud platform. Standard network security and authentication methods along with cybersecurity measures will be implemented to safeguard the system.

9. Data Retention

Traffic data collected through the RTSMS Level 1 deployment, including basic signal performance metrics, operational status information, and system alerts will be stored in the cloud. This storage ensures that historical data is always accessible for performance monitoring, and safety evaluations. TED staff can retrieve this information at any time to support engineering studies, validate improvements, or analyze conditions leading up to reported issues.

For the Level 2 deployment, videos captured by the 360° cameras will remain available on the platform for up to 6 weeks. During this retention period, authorized TED staff may download any required footage from the cloud for detailed intersection studies.

10. Surveillance Data Sharing

Data sharing will be authorized with relevant entities such as traffic management authorities, project partners, and law enforcement for the purposes of traffic operations and safety management and improvements. This data has no intention or uses for any routine surveillance purposes. This data will not be utilized to identify vehicle operators speeding or illegally driving through red traffic lights.

11. Demands for Access to Surveillance Data

All requests for access to surveillance data will be reviewed and approved by the City of Detroit's Law Department to ensure compliance with legal standards.

12. Auditing and Oversight

The technology is available for audits to ensure it is used appropriately and effectively. The system will include capabilities for auditing user login and some activities to ensure transparency. The System will also be closely developed with the DoIT Data and Data Science teams at the City of Detroit allowing them to have technical input into the development, running, and maintenance of the system.

13. Training

Our technology partner, Miovision, will be responsible for providing comprehensive training on their system. Since Miovision's platform is already deployed and operational at multiple signalized intersections throughout the City of Detroit, the training will focus on ensuring that City staff are ready to use, manage, and configure the system effectively. The training sessions will cover key features of the platform, including system navigation, real-time monitoring, alert management, and analyzing signal performance metrics.

14. Complaints

Public complaints or concerns about the deployment or use of technology can be logged through submitting emails to sunjac@detroitmi.gov and will be addressed by the Traffic Engineering Division (TED), Department of Public Works (DPW).